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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/067,218	02/07/2002	Dan A. Steinberg		6453

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EXAMINER

KIM, ELLEN E

ART UNIT PAPER NUMBER

2874

DATE MAILED: 03/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/067,218

Applicant(s)

STEINBERG, DAN A.

Examiner

Ellen Kim

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 December 2004.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6-18, 23, 25-27, 32, 33 and 36 is/are rejected.
- 7) ☒ Claim(s) 4-5, 19-22, 24, 28-31, 34-35 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

**This is responsive to Applicant's amendment with argument filed on 12/30/04.**

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 1-3, 6-10, 12-14, 23, and 25-31 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Tabuchi [USPAT 5,611,006].**

Tabuchi discloses a hybrid type integrated optical device comprising a substrate having dry etched pit sections 25a-e [having a plurality of sides], and wet etched groove sections 24, 42a-d [see front drawing, column 14, lines 34-48]. SiO<sub>2</sub> films are formed [column 14, lines 40-44] at the side walls of the openings 25a-e for grooves forming. It is clear that the grooves sections each adjoin [next to, or continuous to] respective intersecting sides of the pit.

In re claim 6, Tabuchi shows at column 12, lines 64-end that Ion beam etching is utilized.

In re claims 7 -9, Tabuchi shows at column 10, lines 17-26 that silicon nitride and silicon dioxide are utilized, and removing step.

In re claim 12, the smoothing process is shown in fig. 8A-C.

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In re claims 13 and 14, Tabuchi shows at column 10, lines 38-43 that {331} planes are etched by KOH solution.

In re claim 29, the definition of "wings" is not clearly described in the claim. Therefore, any side walls of the pits are considered as wings.

**Claims 15-18, 23, 25-27, 32, 33, and 36 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Nakanishi et al [USPAT 6,257,772].**

Nakanishi et al disclose a photodiode module comprising a first groove 34 having a wider width, a second groove 35 [fig. 10] having a narrower width, pits and a <100> silicon substrate [column 3, lines 4-18]. The first and second grooves adjoin respective intersecting sides of the pit.

With respect to the claimed method of forming the device [such as wet-etched, dry-etched] is not germane to the issue of patentability of the device itself. Therefore this limitation has not given any patentable weight.

In re claims 16 and 17, more pits are shown in fig. 52, and the pit 36 is in between the grooves 34 and 35.

In re claim 23, fig. 53 shows the pit having a depth greater than grooves.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the

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subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

**Claims 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over**

**Tabuchi.**

Tabuchi discloses every aspect of claimed invention except for the U groove.

Official Notice is taken that utilizing U groove instead of V groove is old and well known in the art. See In Re Malcolm 1942 C.D. 589:543 O.G. 440 MPEP 706.02 (a).

It would have been obvious to the ordinary skilled person in the art at the time the invention was made to modify Tabuchi's device to have U groove instead of V groove for the purpose of better holding of the exact diameter size of the optical fiber.

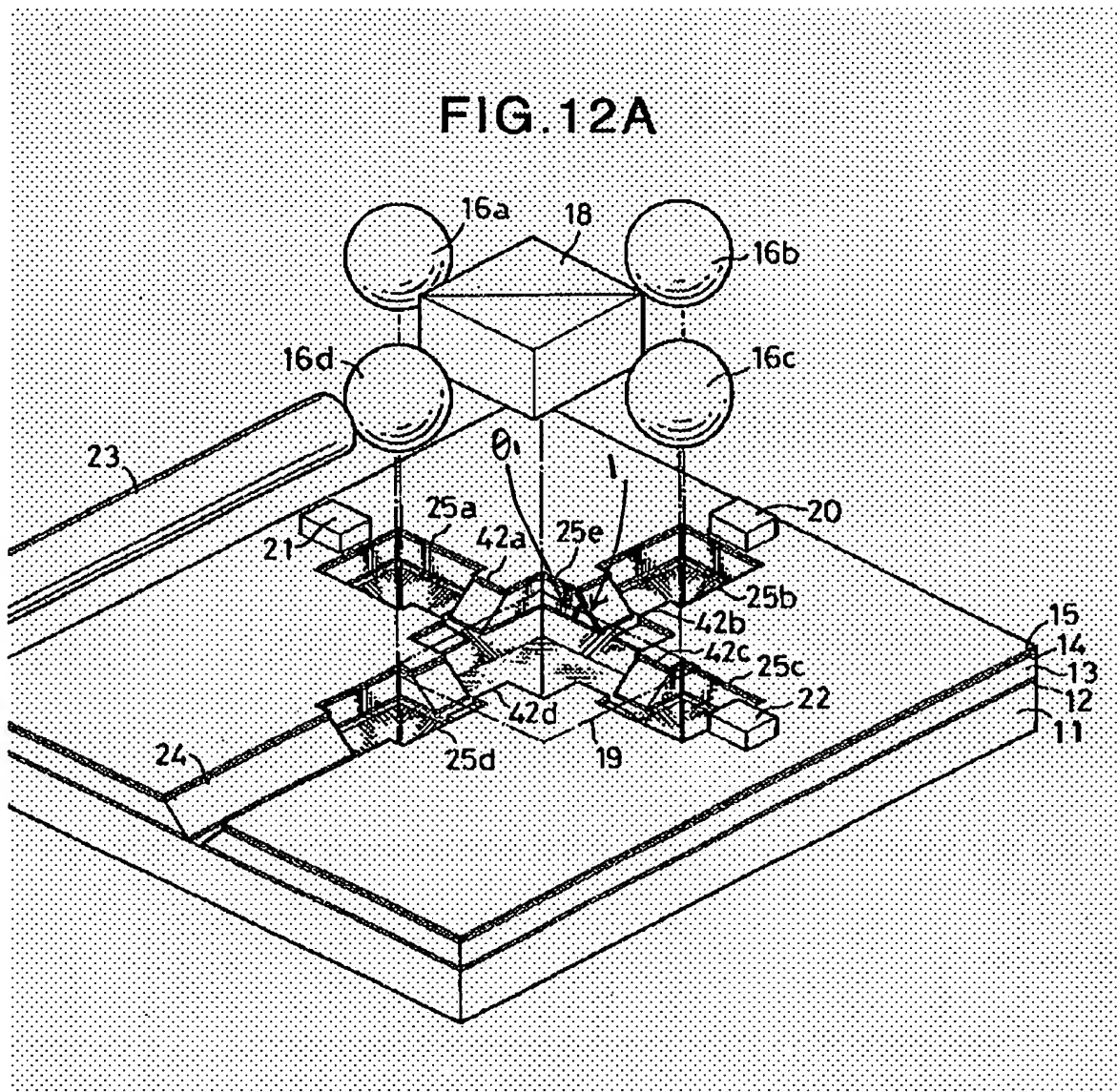
### ***Response to Arguments***

Applicant's arguments filed 12/30/04 have been fully considered but they are not persuasive. Applicant argues that Tabuchi does not disclose or suggest first and second wet-etched groove sections each having a sidewall that intersects a respective side of

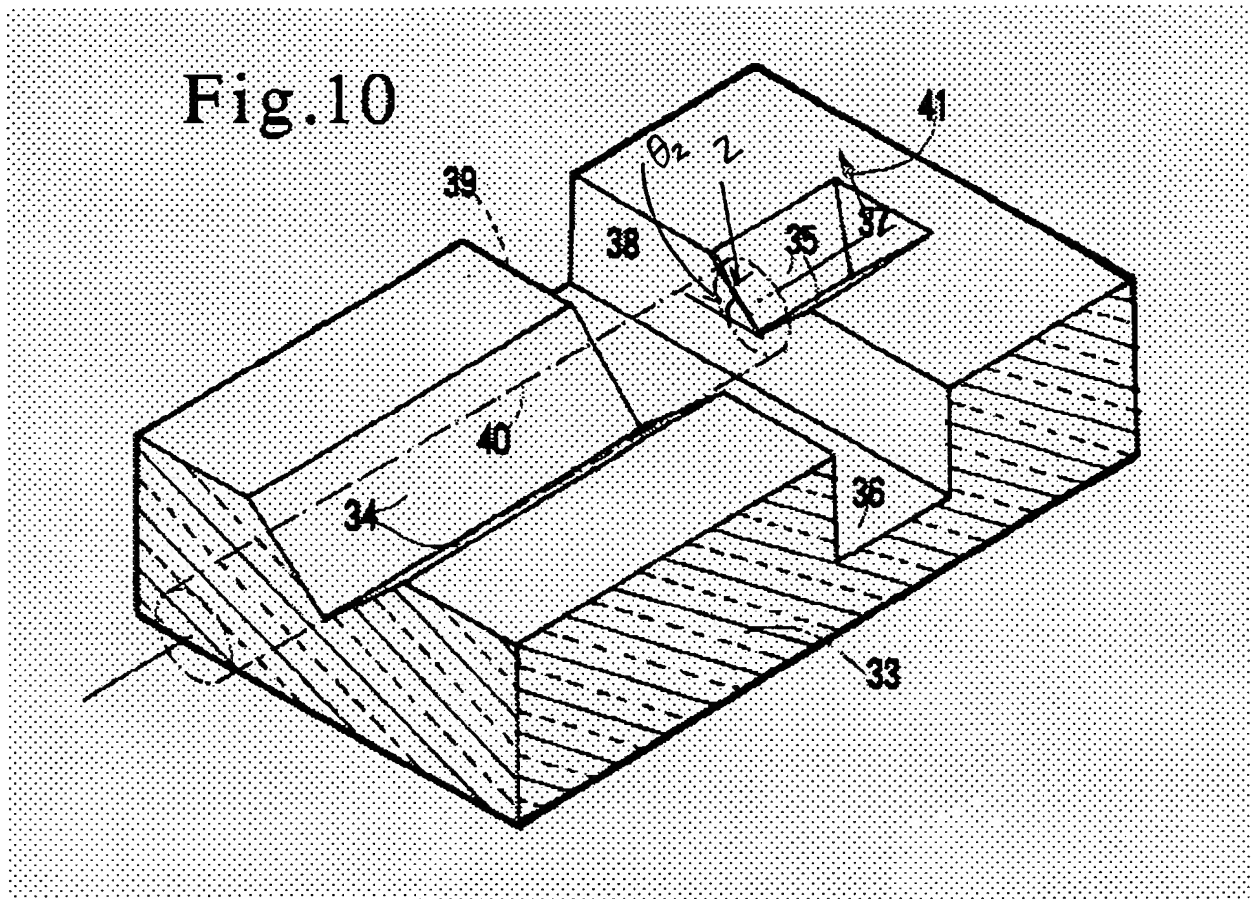
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the pit at a non-orthogonal angle relative to a longitudinal axis of the respective groove section.

Examiner does not agree with Applicant's argument because Tabuchi clearly shows the sidewall that intersects a respective side of the pit at a non-orthogonal angle relative to a longitudinal axis of the respective groove section. See the arrow 1 in the pasted drawing of Fig. 12A. The line of arrow 1 is formed by the sidewall of the groove and the sidewall of the pit. The line of arrow 1 is clearly non-orthogonal to the longitudinal axis of the groove section, and the angle  $\theta_1 < 90^\circ$  is formed by the line of arrow 1 and the longitudinal axis of the groove section.



Applicant further argues that Nakanishi does not disclose or suggest the non-orthogonal angle. See the line of arrow 2 in the pasted drawing of Fig. 10 below. The line of arrow 2 is formed by the sidewall of the groove 35 and the sidewall of the pit 36. Again the angle  $\theta_2 < 90^\circ$  is formed by the line of arrow 2 and the longitudinal axis of the groove.



***Allowable Subject Matter***

**Claims 4, 5, 19-22, 24, 28-31, and 34-35 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.**

The following is a statement of reasons for the indication of allowable subject matter: the prior art does not disclose or suggest a tapered groove formed on a substrate and the method for forming a V-groove in a substrate having a varying width



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comprising all the specific elements with the specific combination including a first section having a different width than the second section as set forth in claims 4 and 5; including pits having a diamond-shaped profile as set forth in claims 19 and 28; including the pits shaped to inhibit wedges as set forth in claims 21 and 30; including the pits being soothed as set forth in claims 22 and 31; including an optical fiber bowed as set forth in claim 24; including pits having wings as set forth in claim 29; and including the respective intersecting sides of the pit each forming a corner aligned with a respective midline of the first and second grooves as set forth in claims 34 and 35.

### ***Conclusion***

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

For all official patent application related correspondence for organizations reporting to the Commissioner of Patents:

- Correspondence that is transmitted by facsimile must be directed to the central facsimile number, (703) 872-9306.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ellen Kim whose telephone number is (571) 272-2349.

The examiner can normally be reached on Monday through Thursday.

Ellen E. Kim

A handwritten signature in cursive script that reads "Ellen Kim".

Primary Examiner

March 23, 2005/EK